Title (en)

Semiconductor device comprising a semi-insulating region and its manufacturing method

Title (de)

Halbleiterbauelement mit einem halbisolierenden Gebiet und Verfahren zu dessen Herstellung.

Title (fr)

Dispositif semiconducteur comprenant une région semi-isolante et sa méthode de fabrication

Publication

EP 0945899 A3 20020320 (EN)

Application

EP 99101460 A 19990127

Priority

JP 1544698 A 19980128

Abstract (en)

[origin: EP0945899A2] It is intended to provide a semiconductor device and its manufacturing method in which a high-resistance region maintaining a high resistance even under high temperatures can be made in a nitride III-V compound semiconductor layer having an electric conductivity by ion implantation. After a nitride III-V compound semiconductor layer having an electric conductivity is grown, a high resistance region is formed in the nitride III-V compound semiconductor layer by locally implanting boron ions therein. The amount of implanted boron is preferably not less than 1/30, or more preferably not less than 1/15, of the carrier concentration of the nitride III-V compound semiconductor layer. The high-resistance region is used as a device isolating region of an electron moving device or as a current blocking layer of a semiconductor laser. <IMAGE>

IPC 1-7

H01L 21/76; H01L 21/8252; H01L 21/338; H01L 21/329; H01L 29/812; H01L 29/872; H01L 27/06; H01S 3/19; H01L 21/322

IPC 8 full level

H01L 21/265 (2006.01); **H01L 21/329** (2006.01); **H01L 21/338** (2006.01); **H01L 21/76** (2006.01); **H01L 21/8252** (2006.01); **H01L 21/86** (2006.01); **H01L 29/47** (2006.01); **H01L 29/812** (2006.01); **H01L 33/06** (2010.01); **H01L 33/14** (2010.01); **H01L 33/32** (2010.01); **H01S 5/00** (2006.01); **H01S 5/20** (2006.01); **H01S 5/323** (2006.01); **H01S 5/343** (2006.01); H01S 5/223 (2006.01)

CPC (source: EP KR US)

H01L 21/265 (2013.01 - KR); **H01L 21/2654** (2013.01 - EP US); **H01L 21/7605** (2013.01 - EP US); **H01L 21/8252** (2013.01 - EP US); **H01L 21/86** (2013.01 - EP US); **H01L 29/475** (2013.01 - EP US); **H01L 29/66212** (2013.01 - EP US); **H01L 29/66863** (2013.01 - EP US); **H01L 29/812** (2013.01 - EP US); **H01S 5/20** (2013.01 - EP US); H01L 29/20 (2013.01 - EP); H01S 5/2059 (2013.01 - EP US); H01S 5/2231 (2013.01 - EP US); H01S 5/32341 (2013.01 - EP US)

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